

## **DRAFT**

### **Fire Regime Condition Class (FRCC) Interagency Guidebook Reference Conditions**

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**Status:** In development **PNV Code:** PSHS

**Potential Natural Vegetation (PNV) Name:** Persistent Shrub South

**Fire regime group:** III – infrequent, mixed severity regime

**Geographic Area:** Southeast Alaska, coastal forests region of southcentral Alaska, Bristol Bay region of southwest Alaska.

#### **Physical Stetting Description:**

The Persistent Shrub South PNV encompasses several different plant communities on a variety of sites; the common element is that the shrub communities are persistent over time and do not appear to be a sere of another PNV. The Persistent Shrub South PNV occurs on a variety of sites ranging from peat deposits in maritime climates, topogenous bogs, blanket bogs, wet stream bottoms, lowland depressions, marshy stream banks, poorly drained forest openings (Viereck et al 1992), and active avalanche shoots. A peat layer may be absent, thin or relatively thick (1-2 m). Permafrost is generally absent, although has been reported at a depth of 60 cm on the Bering Sea side of the Alaska Peninsula (Racine 1978). Slowly moving, standing water may be present on some sites (e.g, shrub swamp sites).

#### **Biophysical Classification:**

Persistent Shrub South PNV occurs in the following ecoregions described by Nowacki et al (2001):

- ☐ Bering Taiga – Bristol Bay Lowlands (P6), Yukon-Kuskokwim Delta (P8)
- ☐ Aleutian Meadows – Alaska Peninsula (M7)
- ☐ Coastal Rainforests – All subregions

The following community types described by Viereck et al (1992) are included Persistent Shrub South PNV group:

- IIB1a – Closed Tall Willow Shrub (topoedaphic climax on sheltered upland slopes only)
- IIB1b – Closed Tall Alder Shrub (topoedaphic climax on avalanche tracks, steep alpine slopes and tundra uplands only)
- IIB2b – Open Tall Alder Shrub (topoedaphic climax at treeline only)
- IIC2e – Open Low Ericaceous Shrub Bog
- IIB1f – Closed Tall Shrub Swamp (Southeast Alaska sites)
- IIC1d – Closed Low Ericaceous Shrub
- IIIA1b – Dry Fescue (sere in coastal shrub communities in southcentral Alaska)

#### **Identification of Key Characteristics of the PNV and Confuser PNVs:**

The vegetation communities included in this PNV are diverse (see cross-walk to Viereck et al (1992) community types above). These same community types occur on different sites (e.g., on floodplains and on burned areas within a forested area) as part of a successional sequence of a different PNV. Therefore, the key to identifying the Persistent Shrub South PNV is to match the community type with the site where it occurs according to the physical setting description and the list of community types described by Viereck et al (1992) above.

Common shrub species on sites dominated by ericads include *Kalmia polifolia*, *Empetrum nigrum*, *Vaccinium uliginosum*, *V. vitis-idaea*, *Andromeda polifolia*, *V. oxycoccos*, *Ledum decumbens*, and *Cladothamnus pyrolaeiflorus* (copperbush). On these sites common understory species include sedges such as *Eriophorum angustifolium*, *Trichophorum caespitosum*, *Carex pluriflora*, and *C. Pauciflora*. Other commonly important herbs include *Rubus Chamaemorus*, *Drosera* spp., and *Gentiana douglasiana* (in Southeast Alaska only). On Persistent Shrub South PNV sites supporting the closed tall shrub swamp vegetation type, common tall shrub species include *Alnus tenuifolia*, *A. sinuata*, *Salix planifolia* and *S. lanata*. On these sites common herbs include *Calamagrostis canadensis*, *Equisetum* spp., *Cornus canadensis*, *Trientalis europaea*, *Potentilla palustris*, and *Carex* spp.. *Shagnum* spp. are usually present and often dominant in the moss layer. In active avalanche shoots *Alnus* spp. are dominant. Trees are absent or scarce.

Shrubs are usually 20-50 cm tall with 25-75% shrub cover, but may be 1.5 m or more tall (e.g., closed tall shrub swamp) (Viereck et al 1992).

The Persistent Shrub South PNV resembles the Persistent Shrub North PNV, which is similarly diverse and defined by the presence of persistent shrubs, but occurs in interior, western and arctic Alaska. The ericaceous plant communities included in this PNV may also bear resemblance to the Dwarf Shrub Tundra PNV, which occurs throughout Alaska but usually occupies well-drained sites and supports shrubs < 20 cm (vs. poorly drained sites and shrub > 20 cm in the Persistent Shrub South PNV).

#### **Natural Fire Regime Description:**

Very little information is available about fire history in persistent shrub communities in Alaska. All of the other PNVs in the region (Southeast Alaska, coastal forests region of southcentral Alaska, Bristol Bay region of southwest Alaska) are long interval systems due to the moist climate. Mean fire return interval in these PNVs are estimated to be:

- ☐ Coastal Boreal Transition Forest PNV (625 year MFI),
- ☐ Coastal Forests PNV, (1500 year MFI)
- ☐ Kenai Mountain Hemlock PNV (910 year MFI).

Based on the climate and fire histories of adjacent PNVs, mean fire return interval (MFI) for the Persistent Shrub South was estimated at 900 years for this model.

#### **Other Natural Disturbance Description:**

Other natural disturbances may include wind, flooding and avalanche, depending on the site.

#### **Natural Landscape Vegetation-Fuel Class Composition:**

The natural vegetation structure is a mosaic of the seral stages described in the table below.

#### **Natural Scale of Landscape Vegetation-Fuel Class Composition and Fire Regime:**

The Persistent Shrub South PNV exists within a landscape mosaic composed primarily of forested and wetland PNVs. Most of the other PNVs occurring in the region are characterized by large, primarily replacement fires.

#### **Uncharacteristic Vegetation-Fuel Classes and Disturbance:**

Uncharacteristic sites have disproportionate percentages of seral classes on the landscape relative to those listed below.

**PNV Model Classes and Descriptions:**

| Class  | Modeled Percent of Landscape | Description   |
|--|------------------------------|---|
| A:<br>Post-disturbance herbaceous<br>0-5 years | 1%                           | Grasses, sedges and/or forbs dominate the site. Shrubs sprout from rootstock  |
| B:<br>Mature shrub<br>5-1,000 years            | 99%                          | Shrubs overtop herbaceous layer and become dominant. A low shrub and/or herbaceous layer usually persists. Shrub cover is 25-75%. |
| Total:   | 100%                         |   |

**Modeled Fire Frequency and Severity:**

|                     | Mean Probability | Mean Fire Frequency (years)<br>(inverse of probability) | Description                          |
|---------------------|------------------|---|--------------------------------------|
| Replacement fire    | .08              | 1,250   | Based on literature and expert input |
| Mosaic fire         | .02              | 5,000   | Based on literature and expert input |
| All Fire            | .11              | 910   | Based on literature and expert input |
| Wind/Weather/Stress | .2               | 500   |                                      |

**Modeled Fire Severity Composition:**

|                      | Percent All Fires | Description                          |
|----------------------|-------------------|--------------------------------------|
| Replacement fire     | 70%               | Based on literature and expert input |
| Non-replacement fire | 30%               | Based on literature and expert input |
| All Fire             | 100%              |                                      |

**Further Analysis:**

- ☐ The 125 year MFI suggested by the March 2004 experts' group does not make sense given the geographic range.

**References**

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### VDDT successional class box diagram:

